NOTE XXIV.

ON A CASE OF COMMENSALISM

of a Fish (*Amphiprion intermedius* Schleg.) and a large Sea-Anemone (*Discosoma*-spec.)

BY

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Among an interesting collection of Invertebrate animals from Sabang-bay (Poeloe Weh) brought together by Mr. G. A. J. van der Sande, Surgeon in the Dutch naval service, and presented by him to the Leyden Museum, there is a large Anemone, belonging to the genus *Discosoma*. About this specimen Mr. van der Sande writes: »in loosening the Anemone from the coral, upon which it was fixed, suddenly some small fishes came in sight and made an attack on the hands of the hospital-waiter who assisted me and on those of my self. Involuntary we were frightened and retracted our hands, and as the trouble of the water ceased, we saw small white-and-brown banded fishes hovering above the Anemone, which every now and then retired between the tentacula and made a renewed attack as soon as we again tried to release the Anemone from the coral". According to Miss Dr. C. Popta, who examined the fishes, they proved to be young individuals of *Amphiprion intermedius* Schleg.

It is not the first time that such a relation is stated between Anemones and fishes; more than thirty years ago Dr. C. Collingwood already made a similar observation

on the reefs of the China-Sea [1]). In the vicinity of the isle of Labuan he met with a gigantic specimen of an Anemone and always he noticed a small fish, banded with three broad rings of white and orange alternately, hovering in the water close by the Anemone and always returning to the same spot. Supposing that there was some connexion between them, »he raked with a stick in the body of the Anemone, and dislodged six fishes of the same species, and of various sizes, from the cavity of the zoophyte". He also mentions an other species of fish, belonging to the same genus, but differing by having black- and cream-coloured vertical bands, that was obtained by Mr. Low from the body of an other fish-sheltering Anemone. In the next year [2]) Lieutenant C. C. de Crespigny communicates about the friendship between the malacopterygian fish *Premnas biaculeatus* and the *Actinia crassicornis*, found in the same region. He observed the fish hovering over the Anemone, gently rubbing the tentacula with its pectoral fins. Trying to catch it, »the alarmed fish, instead of swimming away, dived into the body of its friend, the tentacles closing over it and thus burying it in a living tomb". Some years thereafter [3]) Dr. C. Ph. Sluiter made an interesting communication about the friendship between two large Anemones and two species of *Amphiprion* (*tunicatus* and *Clarkii*), found by him on the reefs of the bay of Batavia. After having transported those animals in his aquarium, he could observe that the small fishes not only found a shelter for the persecutions of larger predatory fishes between the tentacles of the Anemone, but that they also ate the spoil conquered by this animal, as well as the undigested food, that was casted out. In the splendid work on the Great Barrier Reef by Mr. W. Saville-Kent we find some statements and

1) Annals and Magaz. of Nat. History, (4) Vol. I, 1868, p. 31.
2) Proceed. Zoolog. Society, 1869, p. 248.
3) Zoolog. Anzeiger, Jhrg. XI, 1888, p. 240.

figures concerning the commensalism of species of *Amphiprion* and *Discosomidae*. This naturalist found the giant *Discosoma* (*Stoichactis* Hadd.) *Kenti* almost invariably lodging two or more specimens of *A. percula*; »on thrusting a stick into the oral orifice of the Anemone the fishes swim out, but return immediately to their residence within the gastric cavity of their host on the removal of the disturbing missile". Again the allied Anemone, *Discosoma* (*Stoichactis* Hadd.) *Haddoni*, he saw always associated with individuals of another species of *Amphiprion*, *A. bicinctus*. In Western Australian waters [1]), where he also met with the above-named Anemones, he found *D. Kenti* accompanied by an other *Amphiprion*-species, that had the orange ground-colour of the body of *A. percula* and *bicinctus* substituted by a scarlet or black hue as in *A. Clarkii*. Speaking about the meaning of this commensalism for the Anemone, Mr. Saville-Kent makes the suggestion that the fish fulfills for it at once »the *rôle* of lures, attracting by its brilliant colours the notice of other predatory fishes, which, hastening to seize an apparently easy prey, are themselves entrapped within the outspread tentacles of the passively expectant Sea-Anemones". Mr. Sluiter, though not doubting that Anemones can seize living fishes, says that he himself never observed it. However he believes that the moving to and fro of the fishes causes a refreshing of the water which is of advantage for the Anemone, and also that the fishes should draw near some spoil, that is too far removed to be seized by the Anemone itself.

1) The Naturalist in Australia, 1897, p. 219.

Leyden Museum, June 1902.